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DISCOVERIES AND CURRENT EVENTS
IN WORLD PHYTOPATHOLOGY

Canada : Heterothallism and Mutation in Rust Fungi (1).

An interesting contribution emanates from the Dominion Rust Research Laboratory, Winnipeg, relating to our studies of the sexual reactions of *Puccinia graminis*, which have been undertaken to investigate the possibility of new physiological forms arising by hybridization of existing forms. Heterothallism is known to exist in many of the large fungus groups. Recent investigations indicate that it probably occurs among the rust fungi as well. The majority of experiments were made with *P. helianthi*, the sunflower rust, but preliminary work suggests that *P. graminis*, wheat stem rust, is also heterothallic. This discovery is of extreme scientific interest and likely to be of practical importance, since it suggests that the crossing of strains must at least be regarded as a possibility.

In regard to the constancy of physiologic forms of *Puccinia graminis tritici*, the assumption has been that the whole problem of rust control by resistant varieties is based on the idea that biological forms are constant. At present the only criterion of the constancy of a biologic form is its infection capability. It would appear that forms which give a heterogenous reaction on certain differential hosts, at least are more sensitive to environmental changes than other physiological forms. In 1926 we observed in our work at the Dominion Rust Research Laboratory at Winnipeg that among the normal uredinia produced from monospore

(1) Communication from the official correspondent to the Institute, Mr. H. T. Güssow, Dominion Botanist, Central Experimental Farm, Ottawa.

cultures there occurred a few greyish brown pustules. Continually, generation after generation this happened to be the case. Later on from another isolation there appeared pronounced yellow uredinia aside from the normal reddish brown. Careful studies and repeated isolations were made, which seemed to prove that a morphological difference existed, the yellow spores being shorter than the red spores. Considering the difference in colour, spore germination and morphology, it seems apparent that a change has taken place in these cultures which one might feel inclined to regard as a mutation, and if such, as a mutation with loss of character, *i. e.*, of a retrogressive type.

Egypt: Locust Invasion (1).

Towards the end of last October an invasion of locusts was reported in the district of El-Derr (Province of Assuan, Upper Egypt).

Palestine: Short Observations concerning some recently discovered or little known Plantation Pests (2).

A. Citrus plants. — *Dionconotus cruentatus* Brullé (Rhynch. Caps.). This Rhynchota develops on Gramineae and weeds in February and March. In the neighbourhood of Jaffa it passes every year in considerable quantities on to the orange flowers which fall off in consequence. The damage principally occurs in wet orange groves where the ploughing in of the weeds in January is difficult. Up to 50 % of the crop has been affected and on some trees not more than 50 flowers have remained. Control of the pest is best effected by ploughing in the weeds in January and — where this is not possible — by pulling them up by hand.

Papilio machaon L. (Lep. Papil.). — As food plants for the swallowtail butterfly only *Ruta* and the Umbelliferae have been known up to the present time, but in November last caterpillars were found actually feeding on *Citrus amara*. This discovery is of interest because insects very similar to this species are known in India, Africa and America as very noxious citrus pests. The occurrence of *Papilio machaon* in this connection has not however been observed previously.

Tetramorium caespitum judas Wheeler (Hym. Form.). — In Ain Charod the bark of newly planted *Citrus amara* was last year completely "girdled" by this very active black ant, with resulting decay of the plants. Of 600 trees 200 had been destroyed within a week. The damage stopped immediately on laying open the root collars or on wrapping them in cloth soaked in petroleum. No further damage has been observed.

(1) Communication from the Ministry of Agriculture of Egypt, forwarded by Mr. K. A. RAHIM, Delegate of Egypt on the Permanent Committee of the International Institute of Agriculture.

(2) Communication from the official correspondent to the Institute, Dr. F. S. BODENHEIMER, Entomologist, Palestine Zionist Executive, Agricultural Experiment Station, Tel-Aviv.

Cryptobabes gnidiella Mill. (Lep. Pyr.). — During the autumn the caterpillar of this moth develops to a large extent in ripening oranges causing them to drop off. The caterpillar penetrates into the fruits only where they are in contact with some branch or with another fruit, when consequently the peel is softer than usual.

In certain nurseries, caterpillars of *Laphygma exigua* Hb. (Lep. Noct.) and of *Prodenia litura* F. (Lep. Noct.) were found eating the leaves of *Citrus amara* and of sweet orange trees respectively.

In a decaying orange tree was found *Stromatium fulvum* Vill. (Col. Ceramb.) which had most probably developed in the wood that was already withering.

B. Almonds. — The roots and root collars are often infested by the larva of *Capnodis carbonaria* Klug, *Capnodis cariosa* Pall., *Chalco-phorella stigmatica* Schoenh. and *Perotis chlorana* C. et G. (Col. Bupr.). It is not yet ascertained if the case is one of primary or secondary damage. In the mountain regions, larvae of *Cerambyx dux* Feld (Col. Ceramb.) are developing also in the trunks of almond trees in great numbers.

Lymantria lapidicola var. *phoenissa* Rghfr. (Lep. Lymantr.). — In the day time the caterpillars live in groups hidden underground or under stones near the root collar. During the night they swarm especially on young trees which they often entirely strip of their leaves. Special grease-bands are an adequate control measure; "Tanglefoot" and "Raupenlein Ichneumin", have proved very effective in this climate.

Other leaf gnawing insects are caterpillars of *Saturnia pyri* L. (Lep. Saturn.), *Diloba coeruleocephala armena* Stgr. (Lep. Noct.), the caterpillars of *Cimbex quadrimaculata* var. *humoralis* Müll. (Hym. Tenthred.), and also the beetle *Gynandrophthalma viridana* Lac. and *G. limbata* Stev. (Col. Chrysomel.).

In summer the aphid *Tuberodryobia persicae* Chol. is to be found in great numbers on the trees.

Eurytoma amygdali End. (Hym. Chalc.), already known from the investigations of AHARONI and LESNE, develops on the fruit, and on dried fruits the caterpillars of *Ephestia elutella* Hb. and *Myelois ceratoniae* Z. (Lep. Pyral.).

More serious damage is caused sometimes by the caterpillars of the first generation of *Anarsia lineatella* Z. (Lep. Gelech.), which gnaw the young shoots.

C. Vines. — *Paroptya paradoxa* H. S. (Lep. Coss.). Great quantities of these caterpillars bore into the woody stems of the old vine (Kastinich, February 1927), without doing great damage.

Caterpillars of *Euprepia oertzeni* Ld. and *Ocnogyna locwii* Z. (Lep. Arct.), and also of *Agrotis segetum* L., *Laphygma exigua* Hb. (Lep. Noct.), *Chaerocampa celorio* L., *C. alecto* L., *Deilephila livornica* lineata Esp. (Lep. Sphing.), *Pyrameis cardui* L. (Lep. Nymph.) and *Ino ampelophaga* Bayle (Lep. Zyg.) caused decay of the leaves. Means of destruction: spraying with *Urania* green.

The following insects have gnawed the buds and the young leaves: *Opatroides curtulus* Fr., *Mesostenus laevigatus* (Col. Tenebr.) and *Gynandrophthalma viridana* Lac. (Col. Chrysomel.).

Schistocerus bimaculatus Ol. (Col. Bostrych.), as also *Ceratina tibialis* (Hym. Apid.), occurs not only in dead but also in living wood of vine stems.

In the last year *Leucotermes lucifugus* Rossi has done great damage by gnawing green stems and even leaf-stalks. An effective control measure is not known as yet.

D. Olives. — The most important parasites of the olive are *Dacus oleae* Rossi (Dipt. Tryp.) and *Zeuzera pyrina* L. (Lep. Coss.).

In the mountain region many medium-sized and small twigs are attacked by a Cecidomyiid. Where attacked the bark takes on a bluish colour and underneath are found 20-30 gall-gnat larvae, which it has proved impossible to breed out. Afterwards the bark bursts and the whole branch dies off. If the damage is not very considerable, the trees often recover.

E. Apples. — *Carpocapsa pomonella* L. (Lep. Tortr.). It may be of interest that the above insect develops only two generations even in the warm coastal plains of Palestine.

Caterpillars of *Cilix glauca* Sc. (Lep. Drepan.), *Nychiodis lividaria* HB. (Lep. Geom.) effect leaf decay. Caterpillars of *Euzophera immundella* Rag. (Lep. Pyr.) gnaw the root collar. Specimens of *Tenuipalpus bodenheimeri* Berl. (Acar.) are to be found in winter and in spring in great quantities on the buds and young shoots.

Dominican Republic: Specialization of *Albugo* on *Ipomoea* (1).

Cross infection trials have established the fact that *Albugo Ipomoeae-panduranae* (Schw.) Sw. which produces "white rust" on sweet potatoes (*Ipomoea Batatas*) is biologically distinct from the agent of the same disease on another of the Convolvulaceae family, *I. Pes-caprae*. It is probable that this specialization extends to other Convolvulaceae. Consequently two new species or biological forms have been determined, namely: *A. minor* (Speg.) Cif. n. comb. on *I. Batatas* and *A. Ipomoeae Pes-caprae* Cif. n. sp. on *I. Pes-caprae*.

(1) Communication from the official correspondent to the Institute, Dr. R. CIFERRI, Phytopathologist and Director of the "Estación Nacional Agronómica y Colegio de Agricultura" at Moca.

VARIOUS QUESTIONS RELATING TO PLANT PROTECTION
IN THE DIFFERENT COUNTRIES

New Zealand : Activities in Field of Plant Pathology in 1927 (1).

1. A cereal disease survey was conducted during January, the principal cereal-growing regions being thoroughly examined.

Rusts: It was found that the common rust of wheat was *Puccinia elymi* (*P. triticina*), *P. graminis* being confined to a few local areas. On barley *P. anomala* was prevalent throughout. On oats *P. coronata* proved to be the common rust occurring in practically every crop, whereas *P. graminis* was found in but a few localities. Although general, rusts have not appeared to do much damage this season, possibly because they did not appear until late in the season.

Smuts: *Tilletia levis* and *T. tritici* were found in 18 % of the crops, but cannot be considered as being of serious import as the highest infection found was 5 %. The small amount of this disease is accounted for in that the farmers regularly treat their seed grain with copper sulphate or formalin solution.

Ustilago tritici was found to be widespread, ranging from a trace in such wheat varieties as Solid Straw Tuscan to 12 % in White Straw Tuscan. On barley this species was found in only three crops — two of the varieties Cape and one of Black Skinless, infection ranging from a trace to 1 %.

U. jenseii was general through all barley crops, ranging from a trace (approx. 0.1 %) to 12 %. Its prevalence was accounted for by the fact that few growers were in the habit of "pickling" their seed. Experiments have demonstrated that oat-smut may readily be held in check by the use of formalin solution, 1 pint to 30 gallons of water.

Other diseases: — *Ophiobolus graminis* was found to be much more widely distributed than was usual, a trace occurring in 10 % of the crops examined, irrespective of locality. Most infections recorded appeared as single plant infections, the "patch" condition being confined to one or two localities.

Gibberella saubinetii was found in 5 % of crops examined, the degree of infection ranging from a trace to, in one locality, 30 %.

Other diseases recorded were white-head (*Fusarium* spp.) causing a foot-rot of oats, wheat and barley; wheat spot and oat spot (*Septoria*

(1) Communication from Dr. G. H. CUNNINGHAM, Mycologist, Department of Agriculture, Wellington, official correspondent to the Institute.

graminis; mildew (*Erysiphe graminis*) which was noted on 12 % of spring sown wheat crops and three barley crops.

Dry-rot of swedes and turnips has been demonstrated to be (a) seed-borne: (b) caused by *Phoma lingam*.

2. A laboratory and field control of *Phoma lingam* on swedes has been worked out. This consists in steeping bags containing infected seed in a 0.25 % hot Semesan held at 115° F. solution for one hour. The seed is then dried by passing over it a current of hot air.

Field precautions necessary following the treatment of this seed are (1) to rid all seed-drills from previous season's seed; (2) to avoid sowing on land which has been in Brassicas twelve months' previously; (3) to sow only treated swede and turnip seed on any one property, thus obviating the danger of contamination through cultural implements, wandering stock, rodents and the like.

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Brazil. — By a "resolução" of 22 February, 1927 the State of Rio Grande do Sul has been declared a zone infested by grape phylloxera (*Phylloxera vastatrix*). Exportation from this State into every other part of Brazil, both by sea and by land, is therefore forbidden of vines and parts of vine unaccompanied by the respective transit permit attesting to their proper healthy condition. (*Boletim do Ministerio da Agricultura, Industria e Commercio*, Rio de Janeiro, 1927, anno XVI, vol. I, n. 3, pag. 283).

** The Minister of Agriculture, Industry and Commerce by "resolução" of 8 March, 1927 has approved the scheme for carrying out the work of plant protection assigned to the "Instituto Biológico de Defesa Agrícola". This work, which will be performed by inspectors and assistants of the "Defesa Agrícola" and in their respective districts, includes visits to the crops for ascertaining the existence of diseases or plant pests, the immediate notification to the Institute of any diseases or pests observed, the collection of material for investigation purposes, the sending of monthly progress reports, etc. (*Boletim do Ministerio da Agricultura, Industria e Commercio*, Rio de Janeiro, 1927, anno XVI, vol. I, n. 4, pag. 433-434).

Belgian Congo (1). — The Governor General has forbidden by an Order dated 15 March, 1927 the cultivation of the silk cotton tree (*Eri-*

(1) Communication from the official correspondent to the Institute, Dr. Pierre STANER, Director of the Mycological Laboratory, Eala.

dendron anfractuosum) in districts opened to cotton growing as a control measure against the Pink Boll Worm (*Pectinophora gossypiella*).

Italy. — The Minister of National Economy by Decree of 12 August, 1927 has fixed the special technical rules to be observed in the exportation of citrus fruits: lemons ("limoni"), green lemons ("verdelli"), confectionery lemons, oranges, bitter oranges ("bitters" and "confectionery bitters") from Sicily; lemons of Maiori; oranges of Sorrento or of Salerno; lemons and oranges of Rodi from Gargano; lemons and oranges from Calabria; mandarines.

Citrus fruit for exportation abroad must be, *inter alia*, free from scale insects and in particular from *Parlatoria zizyphi* and from *Chrysomphalus dictyospermi*. (*Gazzetta ufficiale del Regno d'Italia*, Roma, 19 settembre 1927, anno 68°, n. 217, pp. 3800-3806).

*** By virtue of Decree-Law No. 1754 of 12 August, 1927, "Consorzi" of olive growers may be established in extensive olive growing zones in accordance with the rules laid down in art. 6 of Law No. 888 of 26 June, 1913, with the aim, *inter alia*, of increasing olive growing, of the reconstitution of old or broken down olive yards and of the use of efficient control measures against the diseases and pests of the olive tree.

The "Consorzi" may be intercommunal and provincial and are allowed to form federations among themselves for the better attainment of their special ends.

The establishment of a "Consorzio" may be made obligatory by the Prefect, in accordance with the advice of the Provincial Economic Council, in cases where olive growing is of great importance in the Province and where the lack of a "Consorzio" is harmful or dangerous.

The "Consorzi" have the right of imposing on individual members a contribution of not more than 0.10 Liras for every olive tree in bearing cultivated by each member.

The funds thus collected and completed by contingent contributions from the State are used by the "Consorzi" for the attainment of their programme. (*Gazzetta ufficiale del Regno d'Italia*, Roma, 30 settembre 1927, anno 68°, n. 226, p. 3937).

*** The Department of Agriculture of the United States of America has consented for this year to the importation of Italian chestnuts under the express condition that consignments shall be accompanied by a phytopathological certificate which must attest to the previous disinfection of the chestnuts themselves.

In accordance with this ruling the Italian Minister of National Economy has ruled that this certificate shall be issued by the "R. Istituto superiore agrario" at Portici (for consignments from Southern Italian Ports), by the "R. Stazione di Patologia vegetale" at Rome (for consignments from Central Italian ports) and from the "R. Osservatorio di Fitopatologia" at Turin (for consignments from Northern Italian ports).

The issue of the certificate is subject to the following conditions :

(a) examination of the different lots of chestnuts deposited in store-houses or exposed for sale in the markets for the determination of the amount of infection by *Carpocapsa* or *Balaninus* ;

(b) selection of the lots which are found infected ;

(c) disinfection of all those lots which are destined for exportation to the United States.

The Directors of the above agrarian institutions may take what measures they consider best for the disinfection, though attention is actually drawn to the method suggested by the Federal Horticultural Board of the United States, which consists in immersion in hot water at 122° F for 40 minutes and subsequent drying.

Exportation is allowed under the following conditions :

(a) the chestnuts shall not contain any living worm nor more than 20 % of dead worms ;

(b) the goods may be rejected by the United States Inspection Service if the above imposed conditions have not been complied with ;

(c) the expenses involved in the inspection and in the issue of certificates shall be charged to the interested parties (1).

Mexico. — By "acuerdo" of the "Secretaría de Agricultura y Fomento" dated 18 April, 1927 and in accordance with the orders of the Regulation of 18 April, 1927 of the "Ley de Plagas" the parts occupied by the States of Sonora, Sinaloa and Nayarit — designated in the text of the "acuerdo" as the "Estados del Noroeste" — have been declared a "zona de defensa agrícola" and trade in plants and plant products in the above zones is subject to the following rules :

(1) The introduction, transit or exportation from the "Estados del Noroeste" of the following products is prohibited except by previous official permit of the "Oficina para la Defensa Agrícola" and after previously undergoing fumigation or inspection and the prophylactic operations laid down by it :—

(a) cotton seeds, the seed coats of cotton, cotton bolls, and generally speaking everything connected with the cotton plant whatever its species or variety ;

(b) Avocado pear fruits, sugar cane, oranges, limes, fruits of *Diospyros*, *Achras Sapota*, *Mammea*, *Anona Cherimolia*, *Psidium Guajava*, plums, peaches, sweet potatoes, turnips, fruits of the bitter orange and its varieties, potatoes and all the plants of the sub-family *Citraceae*, including seeds, stems, etc.

(1) Communicated by the Ministry of National Economy, Rome.

The only ports from which agricultural products may be introduced into the above States are: Estación de Guadalajara (Jal.), Guayanás (Son.), Vavaros (Son.) and Mazatlán (Sin.).

All freight cars coming from the centre and the south of the country and wishing to enter on the South Pacific Railway, from Guadalajara to the North, must undergo inspection by the "Oficina", in order that those found to be loaded with products subject to fumigation shall be duly fumigated.

Products for entry into the country through the seaports given above must be inspected and provided with the respective health certificate.

Passengers and publicity agents travelling on the South Pacific Railway are prohibited from introducing into or exporting from the "zona de defensa" of the "Estados del Noroeste" fruits of every kind unless previously inspected by the "Oficina".

Until the installation of the Guadalajara "Planta Fumigadora" is ready, fumigation and disinfection in the said locality will be subject to orders issued by the "Oficina" and the expenses of the respective operations charged to the parties interested. Fumigation dues in the "Plantas Fumigadoras" will be 10 "pesos" per car.

(2) The parts comprising the districts of the Republic invaded by the "mosca de la fruta" [*Ceratitis capitata*] have been declared a "zona de combate" and control measures against this pest will be undertaken without delay.

(3) Fruit and market garden produce whatever their destination are subject to inspection when coming from the Municipalities of San Marcos, Etzatlán, Ahualulco, Ameca, Amatitán, Arenal, Magdalena and Tequila which lie north of Jalisco, and of Ixtlán del Río and Aguacatlán south of Nayarit, and their loading will only be authorized on a special permit of the "Oficina" which will be issued only for those products found free from diseases and pests.

The loading of the following products will only be allowed after fumigation: rice, maize, banana plants, bulbs of all sorts, branches, layers, "brotes de fruta", plants, nuts, seeds of palms and fruit trees, ornamental and shade trees. (*Diario oficial, México, 30 de abril de 1927, tomo XL, núm. 37, pág. 6*).

** The Regulation of 18 April, 1927 lays down the methods to be adopted in phytopathological inspection and in enquiries regarding crop diseases and pests.

The "Secretaría de Agricultura y Fomento" acting through the "Oficina para la Defensa Agrícola" is authorized to carry out inspections and enquiries even on private estates to determine what crop pests and diseases are present in any given district of the country and to apply such pre-

ventive and control measures as are authorized by the "Ley de Plagas" of 15 November, 1924 and by the present Regulation.

Once the presence of a pest or disease has been determined, or there are well founded reasons for fearing its appearance in a given region, the "Secretaría" maps out and fixes the boundaries of each of the so called "zonas de defensa". The introduction or transport within or the removal from these zones of any article scheduled in the declaration of the "Secretaría" as a carrier of the pest or disease demanding prevention or control is then prohibited.

In cases where the "Secretaría" considers that the disinfection or fumigation of certain of these articles is enough to prevent the spread of the pests or diseases in question, the transit of these articles through the "zona de defensa" may be authorized, always provided they are accompanied by a health certificate issued by the fumigation and disinfection agencies specially established by the Federal Government. The introduction or exportation of these articles will take place through channels fixed by the "Secretaría".

The disinfection and fumigation dues and those for the issue of health certificates are charged to the interested parties, being based on tariffs fixed by the "Secretaría", and the revenue from them will be devoted to the maintenance and development of the phytosanitary Service of the Republic.

Transport firms are only allowed to carry in or out of the "zonas de defensa" goods prohibited by law, provided that they introduce or export them through the officially recognized places, the goods transported being accompanied by the prescribed health certificate.

Owners, tenants or occupiers of all agricultural estates situated within the "zona de defensa" must give notice to the "Oficina" of any circumstance which seems to point to disease or to one of the scheduled pests; they are moreover obliged to apply on their own account, on the lines which will be indicated to them, all control measures against the pest or disease in question according to the "Oficina's" instructions; in case of non-fulfilment the necessary steps will be taken by the agents of the "Oficina" at the expense of those interested.

Infringements of the rules of the present Regulation will be punished by dismissal in the case of Government employees or with fines of not less than 10 "pesos" nor more than 1000 "pesos" without prejudice to further sanctions, in the case of private individuals or firms.

All goods illegally exploited will be considered infected and will be treated in accordance with the rulings issued by the "Secretaría" for diseased plants or plant products. (*Diario oficial*, México, 20 de abril de 1927, tomo XLI, núm. 37, pág. 7).

* * * By an "acuerdo" of the "Secretaría de Agricultura y Fomento", dated 21 April, 1927 Regulations have been issued for the control of the Cotton Boll Weevil ("picudo del algodón", *Anthonomus grandis*) throughout the Republic.

The cotton growers are required to notify to the "Oficina para la Defensa Agrícola" at San Jacinto, D. F., either directly or through its own local officials or other specially appointed agents, the appearance of the boll weevil in their plantations and at the same time to indicate the severity of the attack, the area involved and the extent of the damage caused to the crop.

In the infected or suspect zones "Juntas locales y regionales de Defensa" will be established which will be required to co-operate with the "Oficina" wherever it is necessary to provide for compulsory control and destruction of the boll weevil.

Fumigation and sterilization of cotton plants and parts or products of cotton plants intended for exportation from the infected zone are compulsory, previous notice being given to the "Oficina", which will decide as to the efficacy of the measures adopted for this purpose.

All sowings will be subject to the special regulations issued by the "Oficina" in order to prevent the spread of the insect within the infected or suspect zones. (*Diario oficial*, México, 18 de mayo de 1927, tomo XLII, núm. 14, págs. 5).

* * * By an "acuerdo" of the "Secretaría de Agricultura y Fomento" dated 26 April, 1927, the following cotton zones of the Republic have been declared infested by the Cotton Boll Weevil ("picudo del algodón", *Anthonomus grandis*):

In the State of Tamaulipas the Municipalities of Nuevo Laredo, Matamoros, Reynosa, Camargo, Mier, Guerrero, San Fernando, Soto la Marina, Güémez, Ciudad Victoria, Jaumave and San Manuel; in the State of Chihuahua the districts of Ciudad Camargo, Jiménez and Hidalgo. In the States of Durango and Coahuila a zone has been declared infested having the following boundaries: taking as centre the city of Torreón, Coah., the said zone is bounded by the stations of the National Railways of Mexico and her dependencies: in the North, on the trunk-line México-Ciudad Juárez, Escalon, Chih. (1300 km.); in the South, on the same line, Empalme Cañitas, Zac. (814 km.); in the East, on the line Saltillo-Torreón, Parras, Coah. (152 km.) and Hipolito, Coah. (229 km.), on the line Torreón-Monterrey; in the West, Pedricesa, Dgo. (174 km.) on the line Torreón-Durango.

Furthermore the Municipality of Rodeo in the State of Durango is considered an infested zone. (*Diario oficial*, México, 18 de mayo de 1927, tomo XLII, núm. 14, págs. 5-6).

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NOTES

Establishment of a new entomological Station in Switzerland.

— This Station, which is attached to the Agricultural School at Châteauneuf, has been established for research work regarding vine and fruit tree pests, found in the Canton of Valais. In addition to scientific experiments for determining the most effective means of control, the new Station will also be required to diffuse a general knowledge of practical methods of pest control by arranging lectures, courses of instruction at the winter school, the issue of publications, etc.

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